

## **SNOW AND ICE PRODUCTS FROM THE MODERATE RESOLUTION IMAGING SPECTRORADIOMETER**

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### **ABSTRACT**

Snow and sea ice products, derived from the Moderate Resolution Imaging Spectroradiometer (MODIS) instrument, flown on the Terra and Aqua satellites, are or will be available through the National Snow and Ice Data Center Distributed Active Archive Center (DAAC). The algorithms that produce the products are automated, thus providing a consistent global data set that is suitable for climate studies. The suite of MODIS snow products begins with a 500-m resolution, 2330-km swath snow-cover map that is then projected onto a sinusoidal grid to produce daily and 8-day composite "tile" products. The sequence proceeds to daily and 8-day composite climate-modeling grid (CMG) products at 0.05° resolution. A daily snow albedo product will be available in early 2003 as a beta test product. The sequence of sea ice products begins with a swath product at 1-km resolution that provides sea ice extent and ice-surface temperature (IST). The sea ice swath products are then mapped onto the Lambert azimuthal equal area or EASE-Grid projection to create a daily and 8-day composite sea ice tile product, also at 1-km resolution. Climate-Modeling Grid (CMG) sea ice products in the EASE-Grid projection at 4-km resolution are planned for early 2003.

### **CONCLUSION**

The suite of MODIS cryospheric products (Table 1) is now becoming available in Collection 4 which is the third version of reprocessing for earlier data and is the current version for forward processing. Data are available in Collection 4 beginning from February 24, 2000, and continuing through the present. Collection 4 reprocessing will be complete by the fall of 2003, and new data products will continue to be processed in Collection 4. With each new version, the products have improved.

Collection 4 is the processing stream containing the most advanced algorithms and is the one that should be ordered when possible. (Collection 4 is known as Version 004, or V4, in the EDG when ordering). However, note that the sea ice CMG products (MOD29C1 and MOD29C2) and the snow albedo enhancement to the snow map (MOD10A1) are not yet available to order, but should be available in early 2003. When Collection 5 is created in 2004, the data will be reprocessed beginning February 24, 2000, and to the present. At that time, all of the CMG and snow albedo maps will be orderable.

Most of the MODIS cryospheric products have been validated to stage 2 which means that the accuracy of the products has been assessed by a number of independent measurements, at a number of locations or times representative of the range of conditions expected for the products. As new data sets are added, e.g. daily snow albedo, they will be released at a beta level of validation. The early release will allow users to gain familiarity with the products with the caveat that there may still be significant errors and that the data are not appropriate for use in quantitative scientific publication. As validation proceeds, and necessary algorithm changes are made, the products will move into "provisional" and then "validated" status.

An important enhancement to the snow product (MOD10A1), daily snow albedo, should be available early in 2003 in the Collection 4 forward-processing mode. A daily, global map of sea ice on the climate-modeling grid (CMG) (MOD29C1), will also be available early in 2003 in the forward-processing mode. When significant algorithm changes warrant it in the future for the entire suite of MODIS land products, Collection 5 processing and reprocessing will begin, probably sometime in 2004.